



Volunteer Lake Assessment Program Individual Lake Reports

BEAVER LAKE, DERRY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	5,760	Max. Depth (m):	14	Flushing Rate (yr ⁻¹)	4.1	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	134	Mean Depth (m):	5	P Retention Coef:	0.47	1985	EUTROPHIC	
Shore Length (m):	5,800	Volume (m ³):	2,707,500	Elevation (ft):	287	1999	MESOTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

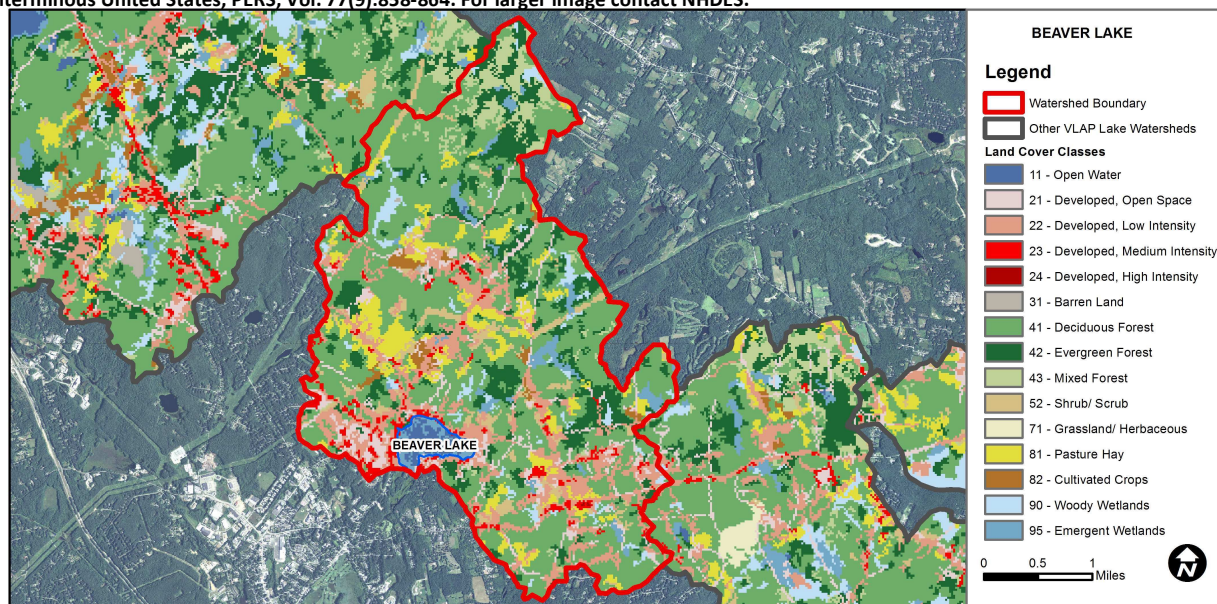
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BEAVER LAKE - COMEAU'S BEACH	E. coli	No Data	No Data for this parameter.
BEAVER LAKE - PARK BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
BEAVER LAKE - GALLIEN'S BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1.13	Barren Land	0.05	Grassland/Herbaceous	0.01
Developed-Open Space	5.16	Deciduous Forest	44.15	Pasture Hay	7.07
Developed-Low Intensity	12.7	Evergreen Forest	12.38	Cultivated Crops	1.1
Developed-Medium Intensity	2.67	Mixed Forest	3.84	Woody Wetlands	2.83
Developed-High Intensity	0.03	Shrub-Scrub	3.77	Emergent Wetlands	3



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

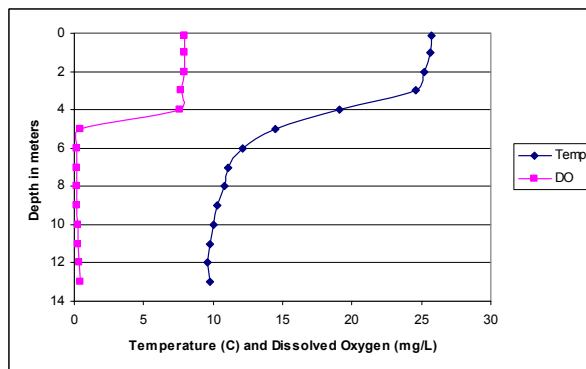
BEAVER LAKE, DERRY, NH

2012 DATA SUMMARY

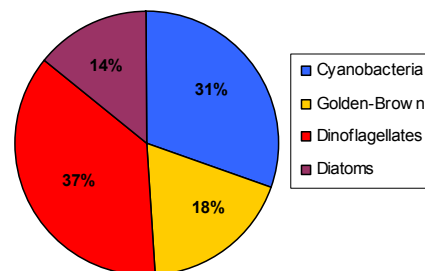
OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were slightly above average for most NH lakes. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- ♣ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were elevated. Chloride was particularly high in Cat-o-Brook at Beaver Rd. and Jenny Dickey Brook.
- ♣ **E. COLI:** E. coli was well below state standards at Cat-o-Brook at Tsenneto Rd.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels were average, and historical trend analysis indicates phosphorus levels tend to fluctuate annually. Hypolimnetic (lower water layer) phosphorus levels increase during the summer likely as a result of anoxic conditions and subsequent release of phosphorus from sediments. Tributary phosphorus levels were elevated in Cat-O-Bk, Cat-o-Bk at Tsenneto, and Jenny Dickey Bk.
- ♣ **TRANSPARENCY:** Transparency was much higher in 2012 than previous years and has been improving since 2004. This is a good sign and we hope to see this continue. Historical trend analysis indicates transparency tends to fluctuate annually.
- ♣ **TURBIDITY:** Deep spot and tributary turbidity levels were slightly elevated throughout the summer; however these levels are fairly normal for the lake and tributaries.
- ♣ **pH:** pH levels were sufficient to support aquatic life, however have fluctuated below desirable levels historically.
- ♣ **RECOMMENDED ACTIONS:** Phosphorus levels in Cat-o-Bk have increased, particularly since 2007, and may be impacted by elevated levels upstream at Tsenneto Rd. Tsenneto Rd. is fed by a relatively large wetland system and there may be recent development activities in this sub-watershed contributing to the increased phosphorus load. Conductivity and chloride levels are elevated, and suggest discussions with the Town regarding low salt application zones, calibrating spreaders, and/or application of road salt alternatives.

Dissolved Oxygen & Temperature Profile



Beaver Lake Phytoplankton Population



Station Name	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Cat O Brook			33	257.3		49			2.7	7.06
Catobk At Beaver Rd			101	245.0		28			2.76	7.59
Catobk At Tsenneto Rd			28	233.0	10	46			2.97	7.12
Deep Epilimnion	19.2	5.19	25	173.3		12	4.15	4.57	1.06	7.3
Deep Metalimnion				174.2		15			2.12	6.66
Deep Hypolimnion				185.4		28			4.14	6.61
Jenny Dickey Brook			58	274.0		38			1.78	7.22
Manter Brook			28	178.2		18			1.44	6.83

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Phosphorus (epilimnion)	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
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Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data

